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DISEASES OF VEGETABLE CROPS

CURLY TOP (WESTERN YELLOW BLIGHT) OF TOMATOES IN UTAH

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Curly top or Western Yellow Blight of tomatoes in Utah was developing rapidly during the forepart of June. Survey notes indicate that approximately 18 per cent of the tomato plants of the State were infected with the disease by June 25. The greatest infection was found in the Brigham City, Perry, Taylor, Hooper, West Point, Syracuse, West Layton, West Kaysville, Farmington, Bountiful, and Magna districts, with the Hooper, West Point, West Layton, Farmington, Bountiful and Magna districts leading in the prevailing degree of destruction.

The figures (see table) in many cases do not give an accurate picture of the degree of destruction occurring in certain districts. For example, in Magna three fields were visited. In one field there was an early planting and a very late planting. Fifty-three per cent of the plants in the early planting were infected, and only 8 per cent of the plants in the late planting. In this district an average of 54.4 per cent of the plants in the early plantings were infected with the disease. In all districts the early planted material was much more heavily infested than the material planted later. Since the early survey was made, the fields planted have become heavily diseased due to the development of cases of infection in the incipient stage when the early survey was made.

The figures and actual observations indicate that the greatest infestation is to be found along the western border of the irrigated districts in Salt Lake, Davis, and Weber Counties. In Utah and Boxelder Counties this was not the case when the June survey was made. In Utah County the region between Orem and Provo city was more heavily infested

than any region in the county, not excluding the Vineyard district on the shores of Utah Lake. In Boxelder County the fields in the western part of Brigham City were much more heavily infested than the fields around Corrinne and westward, much nearer the salt grass wastes of the Great Salt Lake shore line.

Since the notes recorded in this summary were taken, some actual counts and many observations indicate that the disease development has subsided in many districts and rapidly increased in others. In the Tremonton, Elwood, and Corrinne districts no appreciable increase in the degree of disease development has occurred except in the extreme western portion of the Corrinne district where a marked increase in the amount of disease has been noted.

In the Brigham City, Perry, and Willard districts a moderate increase in the percentage of disease has been experienced. In the Hooper district the rate of disease development shows only a very moderate increase. In the extreme western part of West Point, Syracuse, West Layton, and West Kaysville, quite a marked increase in the development of the disease has been experienced, with the West Point and the West Layton situations being the most aggravated. The fields in Clearfield and Layton have become rather seriously diseased in recent weeks.

In Farmington and Bountiful the increase in the percentage of disease is due to the subsequent development of the disease in the fields planted late. This may hold true also for the other sections. In the eastern portions of the irrigated sections the increase in the development of the disease has been very moderate, and crops look promising.

Actual disease counts made in Willard, Hooper, Layton, and West Layton are recorded at the end of the table, and by comparison with previous counts give some indication of the increase in the development of the disease during the last month. The figures for the Layton and West Layton areas are not representative of the district at large, as only a few fields were visited. The percentages herein recorded are probably too high for the districts in general, but represent the condition which is found to exist on the extreme western part of West Layton and West Kaysville, and in the southern part of Layton. The increases in percentage of disease development exhibited by these figures may be considered representative of the severe conditions existing on the western margin of the irrigated sections bordering the Great Salt Lake.

Where possible, checks were made of the amount of curly-top which had developed among the seedlings grown in the Moapa Valley, Nevada, and home grown seedlings, and the difference was found to be insignificant.

When the early survey was made in June it appeared very probable that the curly-top destruction in the State would be general and disastrous, even exceeding that of 1930 in Weber and Boxelder Counties. The comparatively cool weather with frequent showers occurring during the latter part of June and forepart of July apparently checked the spread of the disease generally. Another brood of leaf hoppers emerged from beets, Russian thistle, and other breeding plants about July 6 to 12, and the extent of the damage these might do can not be predicted.

However, it must be said that the tomato plants are much more resistant to infection in the present stage of their development than they were when the first migration of the hoppers into the fields occurred. In spite of these facts the feeding of the July brood of hoppers combined with a recent prolonged hot dry spell is resulting in rather marked increases in the degree of disease development in many districts.

At this writing 30 per cent may be considered a conservative estimate of the destruction caused by curly top in the State in general, based upon recent observations made in districts previously surveyed in detail. In many districts the destruction is very marked and the crop may be considered a total loss.

Table 6. Summary of tomato western yellow blight (Curly-Top) Survey in Utah, 1934

District	Number fields visited	Number counts made	Per Cent Curly-top	District	Number fields visited	Number counts made	Per Cent Curly top
	June 25				July 20		
Dewey	2	4	9.25	Willard	2	4	38.5
Tremonton	9	28	9.53	Hopper	15	21	59.52
Elwood	4	10	5.0	Layton	5	11	60.64
Bear River City	4	8	3.75	West Layton	4	6	88.83
Corrinne	8	14	6.07				
Honeyville	7	10	9.1	Totals	224	553	
Brigham City	6	13	28.77				
Perry	5	12	20.42	Average for State Approximately			25.0
West Ogden	1	5	8.2				
Taylor	1	4	22.5				
Hooper	27	83	33.42				
Orchard	5	19	17.05				
Roy	16	46	17.59				
Gifford	5	20	16.7				
Sunset	2	2	2.0				
Clinton	5	11	15.09		July 26		
West Point	13	36	44.81				
Clearfield	12	25	8.88				
Syracuse	9	21	28.33	Tremonton			10.2
Layton	6	13	18.08	Elwood			6.5
West Layton	5	10	40.9	Bear River City			4.5
Kaysville	5	17	18.24	Corrine			14.0
West Kaysville	4	12	29.17	Brigham City			49.0
Farmington	2	5	55.4	Perry			35.5
Bountiful	3	6	34.5	Hooper			67.8
Granger	1	3	24.0	Clearfield			37.3
Magna	3	6	23.33	Farmington			70.4
Murray	1	3	13.33	Bountiful			59.0
Pleasant Grove	4	10	5.2	Pleasant Grove			6.1
Orem	4	10	11.3	Orem			12.8
Vineyard	4	13	12.77	Vineyard			15.5
Provo	2	4	14.50	Provo			15.0
Springville	3	8	1.38	Springville			2.0
Salem	10	30	2.27	Salem			2.5
Totals	198	511					
Average Disease in State			17.95	Average for State			30.0

OCCURRENCE OF CABBAGE YELLOWS IN CUBA

Reported by F. L. Wellman
(September 7)

While in Cuba in April of this year, I found cabbage in several gardens around Havana, Havana Province, and in and around the Agricultural Experiment Station at Santiago de Las Vegas which is also in this Province. The varieties grown were called Hollander, All Seasons, and Jersey (the last appeared to be, as far as I could judge a mixture of Jersey Wakefield and Golden Acre). Cabbage keeps fairly free from disease during the dry season, and gardeners find it a good money crop when handled in a small way.

I was interested to find a few plants having cabbage yellows (Fusarium conglutinans) in several gardens, and learned that the year before one man lost a good sized patch of cabbage from this disease. I have no doubt of what caused the disease, the symptoms produced were absolutely typical in every respect. Temperature conditions are ideal for this Fusarium disease in Cuba, and it appeared to be most severe on the sandy dark colored soils, the red clays being "not so susceptible to the trouble" as one farmer expressed it.

BLACK ROT OF CABBAGE IN TENNESSEE

There are about 160 acres of land being used for gardens by the employees of the Aluminium Plant at Alcoa, Tennessee. I had a chance to see these gardens the other day and generally speaking, they were exceptionally free from disease; but in all cases where cabbage was being grown, which included about ten acres divided into small portions for the individual gardeners, I found on the average 65 per cent black rot (Bacillus carotovorus). In all regions visited this summer black rot on cabbage has been exceptionally severe. I have found very few fields entirely free from it, and the average damage in all fields observed has been as high as 50 per cent. (Paul R. Miller - August 25).

OEDEMA ON LIMA BEAN

An interesting specimen of lima bean leaf collected in Pike County, Pennsylvania, by Dr. George L. Zundel, August 14, was recently received by the Survey. The leaf and stem surface is thickly spotted with small irregular chocolate brown raised verrucose corky swellings varying in area from pin-point size to 2 or 3 square millimeters. Seventy-five per cent of the upper surface of the leaf is involved. Many of the spots penetrate the leaf parenchyma and appear on the lower epidermis as oedemic blotches somewhat less pronounced than on the upper surface. In other cases the discoloration of the tissue has progressed only through the epidermal and subepidermal cell layers. Dr. Zundel writes that about 10 to 15 per cent of the plants were diseased and dwarfed and the spots were beginning to appear on the pods. He estimated a probable loss of from 10 to 25 per cent for the field concerned.

OTHER REPORTS ON VEGETABLE DISEASES

TOMATO BUCKEYE ROT (PHYTOPHTHORA TERRESTRIS) IN TENNESSEE: This disease has done a great deal of damage in Bedford County. Rainy weather has probably favored it. (Paul R. Miller, with specimen, Aug. 13).

POD BLIGHT OF LIMA BEAN (DIAPORTHE PHASEOLORUM) IN MARYLAND: A specimen of the Phoma stage (P. subcircinata) was received from Clarksburg in August. It was reported to be serious. Determined by J. A. Stevenson.

CUCUMBER MOSAIC (VIRUS) IN MONTANA: Two cucumber plants have mosaic in a garden in Bozeman. This is the first report from Montana. (P. A. Young, Aug. 14).

DISEASES OF SPECIAL CROPS

DISEASES OF BURLEY TOBACCO IN SOUTHWEST VIRGINIA

Reported by R. G. Henderson (August 29)

Root Knot (Heterodera marioni) was observed last week in a one-acre field of tobacco in Scott County. This is the first report of root knot from this section of the State. The soil was a sandy loam of sandstone formation. The disease was very severe in certain portions of the field.

Frog-eye Leaf Spot caused by Cercospora nicotianae is unusually common this year. Ordinarily it occurs only on the lower leaves and the losses from it are negligible but this year in Scott and Russell counties the disease is affecting all of the leaves and has already caused considerable damage. Daily rains for the past month have made favorable conditions for the development of the disease.

Angular Leaf Spot (Bacterium angulatum) has not developed in epidemic form this year. Most of the seed sown in Scott County this year was treated.

Black Root-Rot (Thielavia basicola) is very common in Scott and Russell counties in fields that have been planted to tobacco for several years. The root-rot resistant strain of Burley tobacco which was developed in Wisconsin has been introduced and has given excellent results.

Mosaic (virus). On a visit to several farms in the Burley section, mosaic was observed in a severe form in only a few fields.

Frenching (Cause undetermined) was present to some extent in practically every field observed in Scott and Russell counties. In the majority of fields the disease was confined to certain areas but in a few cases plants throughout the field were affected. The losses from frenching in these two counties will be very large.

STALK ROT OF TOBACCO IN NORTH CAROLINA

Reported by S. G. Lehman (August 23)

The stalk rot disease of tobacco, often called southern root rot and commonly ascribed to the fungus, Sclerotium rolfsii, appears to be increasing in prevalence in North Carolina. Since the dead stalks stand out conspicuously, it is possible to estimate fairly accurately the proportion of affected plants while driving slowly past a diseased field. On August 16 and 17, the writer had occasion to travel in the vicinity of Rocky Mount, Tarboro, Wilson, and Goldsboro. Over certain parts of this trip a count was kept of all tobacco fields bordering on the highway and an estimate was made of the percentage of stalk-rot plants in each. The accompanying table shows the data obtained. An amount of disease less than 0.5 per cent was designated as a trace. The calculated average percentage of disease is based on the number of fields having 0.5 per cent or more of stalk rot.

Table 7. Amount of tobacco stalk rot observed in North Carolina fields, August 16 and 17.

Miles traveled	Number tobacco fields seem	Number with Stalk Rot	Number with 0.5 per cent or more	Range in Per cent diseased stalks	Average per cent
25	55	11	8	Trace to 8	2.3
18	37	14	13	Trace to 10	2.8
28	47	25	25	Trace to 20	2.1
16	31	11	6	Trace to 10	3.4

While some of these plants died before the first leaves were picked, the majority of them succumbed about the time of or soon after the second pulling. Thus, approximately half, or more, of the best leaves on the diseased plants were rendered worthless.

TOBACCO DISEASES OBSERVED IN WESTERN KENTUCKY

I found only very slight amounts of virus diseases in Western Kentucky. Drought spot was general but apparently doing very little damage. In fields observed in Central Kentucky - Lincoln, Boyle, and Rockcastle counties - frenching ran as high as 15 per cent. Frog-eye (Cercospora nicotianae) and wilt (apparently Fusarium oxysporum nicotianae) were also general in Lincoln County. Upon casual observation there appeared to be less virus disease in this section than was observed in the North Carolina tobacco belt. (Paul R. Miller, Aug. 25).

EFFECT OF WILT AND DRY WEATHER ON COTTON IN ARKANSAS

Cotton wilt caused by Fusarium vasinfectum is probably checked somewhat in Western Arkansas by the extremely dry weather. So much dry weather injury is present in cotton that great care has to be exercised in making wilt counts. At Ozark, in Western Arkansas, Half-and-Half cotton was the most susceptible variety seen with 34 per cent wilt on August 10. In contrast to this variety, Rowden 2088 had only 10 per cent and Dixie 14 about 3 per cent. Cotton in Eastern Arkansas has suffered much less from dry weather although in late July it was shedding badly. (V. H. Young, Aug. 16).

DISEASES OF FRUIT AND NUT CROPS

DISEASES OF NUTS IN OREGON

Reported by P. W. Miller (August 13)

WALNUT Bacteriosis, due to Bacterium juglandis (Pierce) EFS., has caused an appreciable reduction in crop yields this year. Losses varied, according to the locality, from 5 to 65 per cent of the crop. The heaviest crop losses from bacteriosis occurred in the Silverton and Roseburg districts, where approximately 35 per cent of the crop was destroyed. For the State as a whole, it is estimated that the disease has caused a 20 per cent reduction in the 1934 walnut crop.

A leaf spot of Persian (seedling) walnuts, due to Ascochyta juglandis Bolt., is present this year in a planting near Leaburg, but the lesions are not sufficiently abundant per leaf infected to cause any appreciable leaf drop.

Downy leaf spot of walnuts, due to Microstroma brachysporum (Pk.) Vest., is present this year on leaves of Juglans regia, but only in very limited amounts and is not causing premature defoliation.

FILBERT. Mildew, due to Phyllactinia coryli (Pers.) Karst., is prevalent on the undersurface of leaves of the cultivated filbert, Corylus avellana, in plantings in the vicinity of Corvallis. For the most part, however, the infected leaves do not seem to be suffering acutely from the disease, as they are still dark green in color and are persisting on the trees. The lateness of the attack is probably responsible for the small amount of damage.

Brown-stain, a non-parasitic disorder of the nuts, is present in only very limited amounts this year in most filbert orchards in Oregon. It is estimated that the loss from this trouble will not exceed one-half per cent of the 1934 Oregon filbert crop.

DISEASES OF CEREAL AND FORAGE CROPS

OAT SMUT IN ARKANSAS

Reported by V. H. Young (August 16)

Some months ago we made a count for smut (Ustilago spp.) on six fields of oats within a ten mile radius of Fayetteville, Arkansas. Most, if not all, of these oats were of the Fulghum variety and from superficial examination most of the trouble was caused by Ustilago avenae. Five counts were taken at random from each field by means of a stiff wire hoop. We found one field free, so far as we could find, of smut. The others had affected panicles as follows: 9.4 per cent, 12.2 per cent, 16.8 per cent, 22.9 per cent and 40.3 per cent.

At University Farm untreated seed of Fulghum oats from apparently clean plots gave us about 8 per cent of smut this year and untreated seed from heavily smutted plots gave us 38 per cent of smut. Practically perfect control was secured through the use of Ceresan dust and the formaldehyde spray method.

BACTERIAL WILT AND BACTERIAL STALK ROT OF CORN IN INDIANA

Reported by G. M. Smith (September 4)

The estimated damage from bacterial wilt (Aplanobacter stewarti) during the past season was about 5 per cent for Indiana and I have also had an estimate from the vegetable pathologist at Champaign that the loss in Illinois did not exceed 5 per cent.

We have had a rather unusual experience this year in that there have been a number of cases of bacterial stalk rot (Bacterium dissolvens) in dent corn from the southern part of the State. At the present time I am not able to estimate the damage. I do not believe that this disease has been reported from Indiana previous to this season.

LEAF SPOT OF CANE SORGHUM IN TENNESSEE

The County Agent of Sevier County wrote to Paul R. Miller that "A leaf spot disease has entirely destroyed about half of a field of sorghum cane and it looks as though the whole field will be dead within a few days." The cause was determined as Colletotrichum lineola. (Sept. 10).

DISEASES OF TREES AND ORNAMENTALS

DAMPING OFF OF BLACK LOCUST SEEDLINGS IN TENNESSEE

Damping off caused by Rhizoctonia solani showed up in eight acres of locust seedlings in the T. V. A. nursery, Clinton County. It caused severe defoliation and killing of some plants. The leaves were matted together by the mycelium. About 75 per cent of the plants which were planted thick on seven acres were attacked. The rainfall has been more than double the normal for the month of August. (Paul R. Miller, with specimen collected Aug. 29).

ROSE ANTHRACNOSE IN OREGON

Specimens of an undetermined rose sent in from home grower at Oswego show characteristic leaf spot lesions of rose anthracnose. The characters of the fungus are in close agreement with the description of Sphaceloma rosarum published by Miss Jenkins (Jour. Agr. Res. 45: 321-337. 1932). We have no record of specimens of this disease having been sent in for several years back. (F. P. McWhorter, Aug. 1).

WEATHER INJURIES

DRY WEATHER INJURY IN ARKANSAS

In the western half of Arkansas corn is almost a complete failure from dry weather and it has suffered much injury even in the more favored eastern sections.

Oaks, orchard trees, and various ornamentals are suffering severely from dry weather and losses will be heavy. Strawberry fields are being killed out. The quality of the peach crop in west central and northwest Arkansas was, much of it, very poor on account of dry weather.

Western Arkansas at least seems to be suffering fully as much dry weather injury as it did in 1930. (See also report on cotton wilt, p. 137). (V. H. Young, Aug. 16).

A CORRECTION

We regret that a misprint occurred in the article by Grace Sherman Cobb, G. Steiner, and F. S. Blanton, on "Observations on the significance of weeds as carriers of the bulb or stem nematode in narcissus plantings," in the preceding issue of the Reporter, pages 127 to 129. The word not was omitted from the second sentence of the second paragraph on page 129. This sentence should read, "The fact that the soybean was found infested with this nematode proves that this plant should not be used as a cover crop where an infestation is known or suspected to occur in a planting." Please make this correction in your copy.